2.15 Threatened and Endangered Species

2.15.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA) (and the California Department of Transportation [Caltrans], as assigned), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take statement or a Letter of Concurrence. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife (CDFW) is the agency responsible for implementing CESA. Section 2080 of the California Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the

coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (a) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (b) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.15.2 Affected Environment

The information in this section is based on the *Natural Environment Study* (NES) (February 2018) and the *Supplemental NES* (September 2018) prepared for the proposed project.

2.15.2.1 Literature Review, Records Search, and Field Visits

A literature review and records search were conducted to identify the presence or potential occurrence of federally- and/or State-listed as endangered or threatened species within or in the vicinity of the Biological Study Area (BSA). Federal and State lists of sensitive species, including the CDFW California Natural Diversity Database (CNDDB), California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (online edition, v8-02), and an official USFWS Information Planning and Conservation System list were reviewed in November 2017 and are provided in Appendix A of the NES (2018). The following 23 federally- and/or State-listed as endangered or threatened plant and animal species were identified in the literature and records searches as potentially occurring in or near the BSA:

- Munz's onion (*Allium munzii*)
- San Diego ambrosia (*Ambrosia pumila*)
- Encinitas baccharis (*Baccharis vanessae*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Santa Monica dudleya (*Dudleya cymosa* ssp. *ovatifolia*)
- Laguna Beach dudleya (*Dudleya stolonifera*)
- San Diego button-celery (*Eryngium aristulatum* var. *parishii*)
- Spreading navarretia (*Navarretia fossalis*)
- Big-leaved crownbeard (*Verbesina dissita*)
- Vernal pool fairy shrimp (*Branchinecta lynchi*)
- San Diego fairy shrimp (*Branchinecta sandiegonensis*)
- Quino checkerspot butterfly (*Euphydryas editha quino*)

- Riverside fairy shrimp (*Streptocephalus woottoni*)
- Tidewater goby (*Eucyclogobius newberryi*)
- Southern California steelhead DPS (*Oncorhynchus mykiss irideus*)
- Arroyo toad (*Anaxyrus* [*Bufo*] *californicus*)
- Western snowy plover (*Charadrius alexandrinus nivosus*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Yellow warbler (*Setophagia petechial*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Stephen's kangaroo rat (*Dipodomys stephensi*)
- Pacific pocket mouse (*Perognathus longimembris pacificus*)

A reconnaissance-level field survey was conducted on May 26, 2017, to characterize the general biological resources and to ascertain the presence or absence of listed species and the likelihood of their occurrence in or near the BSA. Additionally, a focused special-status plant habitat suitability assessment was conducted on November 29, 2017. Areas targeted for in-depth analysis included all locations within the proposed project disturbance limits as well as areas in the vicinity of known special-status plant species occurrences. Focused surveys following USFWS protocols for federally- and/or State-listed riparian birds including least Bell's vireo (LBVI) and southwestern willow flycatcher (SWWF) were conducted on May 3, 11, and 23; June 1, 13, and 23; and July 4 and 13, 2017. No LBVI or SWWF were observed during focused surveys. Focused surveys following USFWS protocols for the federally listed coastal California gnatcatcher (CAGN) were conducted on May 3, 11, and 23; and June 2, 13, and 23, 2017. CAGN were not observed during focused protocol surveys. Focused surveys conducted as part of USFWS protocol surveys for arroyo toad (ARTO) were conducted on March 4, 5, 12, and 30, 2017, along the outer limits and terraces of San Juan Creek. ARTO were identified within the BSA during the first survey, and San Juan Creek is known to support a relatively large ARTO population.

Of the 22 listed special-status species that could potentially occur within the BSA, there is a low potential for four listed special-status plant species to occur in the BSA: Munz's onion, San Diego ambrosia, thread-leaved brodiaea, and Santa Monica dudleya. These four special-status plant species are discussed below. No listed special-status plant species were observed in the BSA during 2017 surveys, and none is expected to occur within the direct project disturbance limits.

Of the 22 listed special-status species that could potentially occur within the BSA, the following four listed special-status plant species are not discussed further in this section because they are not expected to occur within the BSA due to a lack of suitable habitat within the BSA and because these species were not observed in the BSA during 2017 surveys: Encinitas baccharis, big-leaved crown-beard, San Diego button-celery, and spreading navarretia. Two additional listed plant species identified in the literature review are not expected to occur because the BSA is located outside of the species known range and because these species were not observed in the BSA during 2017 surveys: slender-horned spineflower and Laguna Beach dudleya; however, the BSA contains suitable habitat for these species.

Of the 22 listed special-status species that could potentially occur within the BSA, suitable habitat is present for the following five special-status animal species[1]: LBVI, SWWF, CAGN, ARTO, and southern California steelhead trout. One listed special-status animal species, ARTO, was observed in the BSA during project surveys in 2017. These five special-status animal species are discussed below.

Munz's Onion

Munz's onion is a federally listed as endangered and State-listed as threatened perennial bulbiferous herb endemic to western Riverside County in grassland, sage scrub, and woodland communities. Current threats to Munz's onion include urban development, off highway vehicle activities, competition with invasive species for resources and space, climate change, and extirpation due to wildfire.

Munz's onion was not observed within the BSA during the 2017 surveys. While suitable habitat was found to be present throughout the BSA, the species is not expected to occur within the project disturbance limits given that the closest known occurrence is approximately 6 miles away in the eastern foothills of the Santa Ana Mountains (CNDDB 2017).

San Diego Ambrosia

San Diego ambrosia is a federally listed as endangered perennial rhizomatous herb that occurs in chaparral, grassland, coastal sage scrub (CSS), and freshwater wetland habitats up to 3,500 feet (ft) in elevation. The species is known from San Diego and

[1] For the purposes of this discussion, special-status animal species are considered to be those listed under FESA and/or CESA.

western Riverside counties, and is considered threatened by development, non-native plants, vehicles, road maintenance, and foot traffic.

San Diego ambrosia was not observed within the BSA during the 2017 surveys. While suitable habitat was found to be present throughout the BSA, the species is not expected to occur within the project disturbance limits given that the closest known occurrence is approximately 9 miles away near Lake Elsinore (CNDDB 2017).

Thread-Leaved Brodiaea

Thread-leaved brodiaea is a federally listed as threatened and State-listed as endangered perennial bulbiferous herb typically associated with grassland or vernal pools. It usually grows on clay or alkaline flats from 80 to 4,000 ft in elevation. It occurs from San Diego and Riverside Counties northward to San Luis Obispo County and is considered threatened by residential development, agriculture, foot traffic, grazing, illegal dumping, non-native plants, road development, and fuel modification.

Thread-leaved brodiaea was not observed within the BSA during the 2017 surveys. While some suitable habitat was found to be present in the BSA, the species is not expected to occur within the project disturbance limits given that the closest known occurrence is approximately 5 miles to the west of the project area (CNDDB 2017).

Santa Monica Dudleya

Santa Monica dudleya is a federally listed as threatened endemic southern California perennial herb (succulent) typically associated with volcanic or sedimentary rock outcrops within chaparral and CSS habitats. It is known only from approximately 10 occurrences within the Santa Monica Mountains and several occurrences in the Santa Ana Mountains. Santa Monica dudleya is considered threatened by development and recreational activities.

Santa Monica dudleya was not observed within the BSA during the 2017 surveys. While some suitable habitat was found to be present in the BSA, the species is not expected to occur within the project disturbance limits given that the closest known occurrence is approximately 7.5 miles to the north of the project area (CNDDB 2017).

Slender-Horned Spineflower

Slender-horned spineflower is a State and federally listed as endangered annual herb typically associated with sandy cobbly riverbed alluvium in alluvial fan sage scrub, on floodplain terraces and benches that receive infrequent overbank deposits from

generally large washes or rivers, where it is most often found in shallow silty depressions dominated by leather spineflower (*Lastarriaea coriacea*) and other native annual species. It usually grows on cryptogamic soil crusts composed of bryophytes, algae and/or lichens at 600 to 2,500 ft in elevation. It is known only from Los Angeles, Riverside, and San Bernardino Counties, California, and is considered threatened by habitat destruction from urbanization, altered hydrology, off-highway vehicles, agriculture, non-native plants, highway development, and climate change.

Slender-horned spineflower was not observed within the BSA during the 2017 surveys. While some suitable habitat was found to be present in the BSA, the species is not expected to occur within the project disturbance limits given that there are no known occurrences in the vicinity of the BSA, and the species is known only from Los Angeles, Riverside, and San Bernardino Counties.

Laguna Beach Dudleya

Laguna Beach dudleya is a State and federally listed as threatened perennial stoloniferous herb typically associated with chaparral, cismontane woodland, coastal scrub, and valley and foothill grasslands, often in thin soil on north-facing sandstone cliffs from 30 to 780 ft in elevation. Laguna Beach dudleya is considered threatened by risks to small population size, increased competition from non-native plant species, fuel modification, and climate change.

Laguna Beach dudleya was not observed within the BSA during the 2017 surveys. While some suitable habitat was found to be present in the BSA, the species is not expected to occur within the project disturbance limits given that there are no known occurrences in the vicinity of the BSA, and the known range is restricted to coastal canyons located in Laguna Beach.

Least Bell's Vireo

LBVI is a federally and State-listed endangered species; therefore, LBVI nests and their eggs are protected by FESA. LBVI is a small migratory songbird that nests in southern California. This species is a rare and local summer resident of southern California and breeds in willow thickets and lowland riparian woodlands. There is no designated critical habitat for LBVI in the BSA, but suitable habitat is present.

Focused surveys were conducted in 2017 to determine the presence of LBVI in the BSA (see Appendix C of the NES). LBVI were not observed during these focused protocol surveys. Habitat that was surveyed for LBVI included sycamore riparian woodland and coast live oak woodland. Within the BSA, most of the riparian habitat

is only marginally suitable for the LBVI, as there is generally a poorly developed understory of shrubs. The most suitable area for the LBVI is in lower Hot Springs Canyon, where the forest canopy is more open and suitable shrub species such as mulefat (*Baccharis salicifolia*) are more prevalent.

Southwestern Willow Flycatcher

SWWF is a federally and State-listed endangered species; therefore, SWWF nests and their eggs are protected by FESA. SWWF is one of three subspecies of willow flycatcher that breed in California, and SWWF is the only subspecies that breeds in southern California. Suitable riparian habitat is present in the BSA for SWWF, but no designated critical habitat is present.

Focused surveys were conducted in 2017 to determine the presence of SWWF in the BSA (see Appendix C of the NES). No SWWF were observed during these focused protocol surveys. Habitat that was surveyed for SWWF included sycamore riparian woodland and coast live oak woodland. Like LBVI, the most suitable habitat for the SWWF within the BSA is located in lower Hot Springs Canyon, where there is a denser riparian understory.

Coastal California Gnatcatcher

CAGN was listed as threatened by the USFWS in March 1993. CAGN is a non-migratory songbird that typically nests and forages in moderately dense stands of CSS below 2,500 ft in elevation in southern California. There is no designated critical habitat in the BSA. In California, the CAGN is closely associated with CSS, especially when dominated by California sagebrush. Moderately and sparsely vegetated habitats and edges are more often occupied than dense scrub. CAGN is rarely found above 2,500 ft in elevation or in chaparral habitats. Mulefat scrub and ruderal habitats near to CSS are often occupied. Use of alternative habitats such as these and other scrub, riparian, and wooded habitats increases following the nesting season.

Focused protocol surveys were conducted in 2017 to determine the presence of CAGN in the BSA (see Appendix D of the NES). CAGN were not observed during these focused protocol surveys.

Arroyo Toad

ARTO was listed as federally endangered by the USFWS on December 16, 1994, and is considered a California Species of Special Concern. ARTO breeds both within streams and in small backwater pools that form along the stream margins, usually in

relatively shallow water (4 inches). Adult and subadult ARTO seek shelter during the day and other periods of inactivity by burrowing into old flood channel terraces and often into the soils below the canopy of arroyo willow (*Salix lasiolepis*), cottonwoods (*Populus fremontii*), or coast live oak (*Quercus agrifolia*). ARTO move between the stream and upland foraging sites as well as up and down the stream corridor to find suitable breeding pools, spending much of their lives in riparian habitats adjacent to breeding locations. Outside of the breeding season, ARTO are essentially terrestrial and known to burrow in multiple types of upland habitat found in the BSA, such as sycamore riparian woodland, oak woodland, CSS, chaparral, and grasslands.

The BSA contains designated ARTO critical habitat areas as well as suitable habitat located outside of designated critical habitat. Based on the results of field surveys and known ARTO ecology, aquatic and upland habitats within 200 ft of San Juan Creek are considered suitable and potentially occupied by ARTO, which equates to an estimated 154.72 acres of suitable habitat within the BSA. Suitable habitat outside the designated critical habitat boundaries equals approximately 61.17 acres within the BSA.

A total of 124.49 acres of designated ARTO critical habitat are present within the BSA. Of the designated ARTO critical habitat outside of 200 ft from San Juan Creek, 12.66 acres are characterized as having an asphalt surface or other developed areas that do not contain the physical or biological features required for ARTO recovery.

Protocol surveys were conducted for a separate Caltrans project, the SR-74 Shoulder Widening Safety Project (12-0L720), which overlaps with the BSA for the proposed project. ARTO were observed in various locations, and were observed in multiple locations in marginal habitat not considered arroyo or typically described as highly suitable breeding habitat. Individuals were also observed on multiple occasions during invasive predator removal efforts conducted for the SR-74 Shoulder Widening Safety Project (12-0L720). Two shallow pools that support slow moving water and suitable soils within the BSA are considered as potential breeding pools for ARTO. ARTO egg masses have been observed during invasive predator removal visits within the BSA where adult ARTO were documented in 2017 within the BSA.

Southern California Steelhead Trout

Southern California steelhead trout (southern steelhead) is an anadromous, or oceangoing, form of the species *Oncorhynchus mykiss*. The resident form that stays within freshwater is rainbow trout. Populations of rainbow trout are abundant, but

populations of steelhead are not. After the National Marine Fisheries Service (NMFS) reviewed all west coast steelhead populations, the southern steelhead was listed as endangered under FESA on August 18, 1997. In January 2006, a final listing determination was issued for the southern California steelhead Distinct Population Segment (DPS).

San Juan Creek is considered one of the major steelhead watersheds in the southern portion of the Recovery Planning Area. One of the sources of threat in the San Juan Creek Watershed includes culverts and road crossings. No critical habitat for southern steelhead exists in the BSA, and the species is currently considered extirpated from the portion of San Juan Creek that is within the BSAdue to downstream barriers. However, a portion of lower San Juan Creek near its mouth at the Pacific Ocean is seasonally passable for southern steelhead and individuals have been recorded in these areas in recent years according to CDFW fisheries data. CDFW fisheries data indicates that barriers to steelhead passage are located approximately 6 miles downstream of the BSA. Recovery projects are actively underway to remove barriers to fish passage within San Juan Creek.Since the species is not expected to occur within the BSA, no focused surveys were conducted for this species. The potential for this species to occur in the BSA was determined based on an evaluation of the habitat present in the BSA, historical studies, recent occurrence data, and personal communications with NOAA Fisheries and the U.S. Forest Service.

2.15.3 Environmental Consequences

2.15.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Listed Special-Status Plant Species (Munz's Onion, San Diego Ambrosia, Thread-Leaved Brodiaea, Santa Monica Dudleya, Slender-Horned Spineflower, and Laguna Beach Dudleya)

Construction of the Build Alternative is not expected to result in direct temporary impacts to listed special-status plant species. Construction of the Build Alternative has a low potential to result in indirect temporary impacts to potentially suitable habitat for the six listed special-status plant species through increased dust, erosion during construction, or the introduction of invasive species. With implementation of Measures BIO-1 and BIO-3 provided in Section 2.11, Natural Communities, construction of the Build Alternative is not expected to result in temporary adverse impacts to listed special-status plant species that have the potential to occur within the BSA. A "*No Effect"* determination has been made for these six listed special-status plant species under the provisions of FESA Section 7(a)(2).

Least Bell's Vireo

Direct temporary impacts to LBVI are not expected to occur as a result of implementation of the Build Alternative because LBVI were not observed in the BSA and suitable habitat within the project impact limits is very limited.

Construction of the Build Alternative has the potential to result in indirect temporary effects to LBVI associated with increased noise, vibration, dust, and lighting during construction. Because LBVI typically occupy riparian natural communities, with implementation of Measures BIO-1 through BIO-3 provided in Section 2.11, along with Measures BIO-42 through BIO-48 provided in Section 2.15.4, construction of the Build Alternative is not expected to result in temporary adverse impacts to LBVI. Under the provisions of FESA Section 7(a)(2), the effect determination for LBVI is "*may affect, not likely to adversely affect*" since there is potentially suitable habitat present adjacent to the Build Alternative impact limits, and there is a more than 2-year time lapse between 2017 protocol surveys and the start of construction.

Southwestern Willow Flycatcher

The Build Alternative is not expected to result in direct or indirect temporary impacts to SWWF because SWWF was not observed in the BSA and this species is extremely rare in Orange County. Because SWWF typically occupy riparian natural communities, with implementation of Measures BIO-1 through BIO-3 provided in Section 2.11, construction of the Build Alternative is not expected to result in temporary adverse impacts to SWWF. The effect determination for the SWWF is "*No Effect"* under the provisions of FESA Section 7(a)(2).

Coastal California Gnatcatcher

The Build Alternative is not expected to result in direct impacts to CAGN because CAGN were not observed in the BSA. Construction of the Build Alternative has the potential to result in indirect temporary effects to CAGN associated with increased noise, vibration, dust, and lighting during construction. Because CAGN typically occupy CSS, with implementation of Measures BIO-1 through BIO-3 provided in Section 2.11, along with Measures BIO-42 through BIO-48 provided in Section 2.15.4, construction of the Build Alternative is not expected to result in temporary adverse impacts to CAGN. Under the provisions of FESA Section 7(a)(2), the effect determination for CAGN is "*may affect, not likely to adversely affect*" since there is suitable habitat present within the BSA, and there is a more than 2-year time lapse between 2017 protocol surveys and the start of construction.

Arroyo Toad

Construction of the Build Alternative would result in temporary direct impacts to 5.77 acres of ARTO critical habitat, 1.45 acre of which does not contain the physical or biological features required for ARTO recovery. Therefore, a total of 4.32 acres of designated ARTO critical habitat temporarily impacted by the Build Alternative contains the physical or biological features required for ARTO recovery. No potential breeding pool habitat was identified within the portions of ARTO critical habitat that would be affected by the Build Alternative.

Additional areas outside of designated ARTO critical habitat within the project footprint are suitable for ARTO and contain the physical or biological features required for ARTO recovery. Approximately 1.48 acre of suitable ARTO habitat outside of designated critical habitat would be temporarily impacted by the Build Alternative; of this 1.48 acre, 0.004 acre exists as potential breeding pool habitat.

Additionally, construction of the Build Alternative may result in indirect temporary impacts associated with construction noise, vibration, dust, erosion, and lighting in areas outside of the project impact limits.

In order to minimize temporary impacts to ARTO and existing downstream breeding or critical habitat, Measures BIO-1 and BIO-4 provided in Section 2.11 and Measure BIO-13 provided in Section 2.14, Animal Species, would be implemented during construction of the Build Alternative. Furthermore, with implementation of Measures BIO-18 through BIO-41, described below, construction of the Build Alternative is not expected to result in temporary adverse impacts to ARTO within the BSA.

Consultation with USFWS has been conducted to ensure that any temporary impacts to this species and/or its breeding habitat are avoided and/or minimized to the greatest extent possible. Due to the observed locations of ARTO within the BSA and the potential for take of the species and/or its critical habitat, it has been concluded that the project "*may affect and is likely to adversely affect*" the ARTO under the provisions of FESA Section 7(a)(2).

Southern California Steelhead Trout

The Build Alternative is not expected to directly or indirectly temporarily impact southern steelhead because this species is not expected to occur within the BSA. However, with implementation of Project Features PF-WQ-1 and PF-WQ-2 provided in Section 2.7, requiring preparation and implementation of a construction Storm Water Pollution Prevention Plan (SWPPP), construction of the Build Alternative

would not result in temporary adverse impacts to this species or its habitat within the BSA.

No Build Alternative

The No Build Alternative would not include construction of any of the proposed project improvements and, therefore, would not result in temporary impacts to listed special-status plant or animal species. Existing effects associated with the operation of SR-74 would continue under the No Build Alternative.

2.15.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

Listed Special-Status Plant Species (Munz's Onion, San Diego Ambrosia, Thread-Leaved Brodiaea, Santa Monica Dudleya, Slender-Horned Spineflower, and Laguna Beach Dudleya)

The Build Alternative is not expected to result in any direct or indirect permanent impacts to the five listed special-status plant species because these species were not observed within the project impact limits. As stated above in Section 2.15.3.1, a "*No Effect"* determination has been made for these six listed special-status plant species.

Least Bell's Vireo

The Build Alternative is not expected to result in any direct or indirect permanent impacts to LBVI or designated critical habitat because this species was not observed within the BSA. If LBVI are found during pre-construction surveys or project monitoring, Section 7 consultation will be re-initiated and a CDFW Section 2081 permit may also be required; compensatory mitigation may be developed in consultation with USFWS and CDFW at that time.

Southwestern Willow Flycatcher

The Build Alternative is not expected to result in any direct or indirect permanent impacts to SWWF or designated critical habitat because this species was not observed within the BSA and this species is extremely rare in Orange County. If SWWF are found during pre-construction surveys or project monitoring, Section 7 consultation will be re-initiated, and additional compensatory mitigation may be developed in consultation with USFWS.

Coastal California Gnatcatcher

The Build Alternative is not expected to result in any direct or indirect permanent impacts to CAGN or designated critical habitat because CAGN were not observed in the BSA. If CAGN are found during pre-construction surveys or project monitoring,

Section 7 consultation will be re-initiated, and additional compensatory mitigation may be developed in consultation with USFWS.

Arroyo Toad

Direct permanent effects of the Build Alternative on ARTO include potential mortality of individuals within the construction limits as well as suitable/occupied/ critical habitat removal and modifications. Other direct permanent effects to the species could result from scour of creek substrate material as a result of the installation of new drainage features.

A total of 11.02 acres of designated ARTO critical habitat would be permanently impacted by the Build Alternative, although 9.79 acres of these permanently impacted areas are characterized as having an asphalt surface or other developed areas that do not contain the physical or biological features required for ARTO recovery. Therefore, a total of 1.23 acres of designated ARTO critical habitat containing the physical or biological features required for ARTO recovery would be permanently impacted by the Build Alternative. Approximately 0.80 acre of suitable ARTO habitat outside of designated critical habitat would be permanently impacted by the Build Alternative; of this 0.80 acre, 0.12 acre exists as potential breeding pool habitat.

The Build Alternative has the potential to result in indirect permanent effects to this species from changes in hydrology where drainage improvements are installed or modified, or in areas where adjacent habitat compositions change as a result of the new roadway and drainage infrastructure. Changes in hydrology where drainage improvements are proposed to be added or modified are anticipated to be relatively minor given the highly variable hydrology of San Juan Creek.

Due to the observed locations of ARTO within the BSA and the potential for take of the species and/or its critical habitat, it has been concluded that the project "*may affect and is likely to adversely affect*" ARTO. Implementation of Measures BIO-23 and BIO-27 would mitigate for permanent project-related impacts to ARTO and ARTO critical habitat.

Southern California Steelhead Trout

The Build Alternative is not expected to result in any direct or indirect permanent impacts to southern steelhead because this species is not expected to occur within the BSA. Although compensatory mitigation is not required for this species, the removal of invasive ARTO predators from San Juan Creek required by Measures BIO-23 and BIO-27, provided in Section 2.15.4, has the potential to benefit southern steelhead

should the species be re-introduced to the upper San Juan Creek watershed in the future.

Effect determinations for each species on the federal lists are shown in Table 2.15.1.

Table 2.15.1 Effect Determination for Federally Listed Species and Critical Habitat

Scientific Name	Common Name	Status		General Habitat Description	Effect Determination
		USFWS	CDFW		
Birds					
Polioptila californica californica	Coastal California gnatcatcher	FT	SSC	Inhabits coastal sage scrub in low-lying foothills and valleys up to about 500 meters (1,640 ft) in elevation in cismontane southwestern California and Baja California.	May affect, not likely to adversely affect
Vireo bellii pusillus	Least Bell's vireo (nesting)	FE	SE	Riparian forests and willow thickets. The most critical structural component of Least Bell's Vireo habitat in California is a dense shrub layer 2 to 10 ft (0.6–3.0 meters) above ground.	May affect, not likely to adversely affect
Empidonax traillii extimus	Southwestern willow flycatcher (nesting)	FE	SE	Rare and local breeder in extensive riparian areas of dense willows or (rarely) tamarisk, usually with standing water, in the southwestern U.S. and possibly extreme northwestern Mexico. Winters in Central and South America. Below 6,000 ft in elevation.	No effect
Amphibians					
Anaxyrus californicus	Arroyo (=arroyo southwestern) toad	FE	SSC	Washes and arroyos with open water; sand or gravel beds; for breeding, pools with sparse overstory vegetation. Coastal and a few desert streams from Santa Barbara County to Baja California.	May affect, likely to adversely affect
Fishes					
Oncorhynchus mykiss irideus	Southern California steelhead DPS	FE	–	Federal listing refers to naturally spawned anadromous *O. mykiss* (steelhead) originating below natural and manmade impassable barriers from the Santa Maria River to the U.S.-Mexico Border.	No effect
Insects					
Euphydryas editha quino	Quino checkerspot butterfly	FE	–	Meadows or openings within coastal sage scrub or chaparral below about 5,000 ft where food plants (*Plantago erecta* and/or *Orthocarpus purpurascens*) are present. Historically known from Santa Monica Mountains to northwest Baja California; currently known only from southwestern Riverside County, southern San Diego County, and northern Baja California.	No effect
Crustaceans					
Streptocephalus woottoni	Riverside fairy shrimp	FE	–	Warm-water vernal pools (i.e., large, deep pools that retain water into the warm season) with low to moderate dissolved solids, in annual grassland areas interspersed through chaparral or coastal sage scrub vegetation. Suitable habitat includes some artificially created or enhanced pools, such as some stock ponds, that have vernal pool like hydrology and vegetation. Known from areas within	No effect

Table 2.15.1 Effect Determination for Federally Listed Species and Critical Habitat

Scientific Name	Common Name	Status		General Habitat Description	Effect Determination
		USFWS	CDFW		
				about 50 miles of the coast from Ventura County south to San Diego County and Baja California.	
Branchinecta sandiegonensis	San Diego fairy shrimp	FE	–	Small, shallow (usually less than 30 centimeters deep), relatively clear but unpredictable vernal pools on coastal terraces. Pools must retain water for a minimum of 13 days for this species to reproduce (3 to 8 days for hatching, and 10 to 20 days to reach reproductive maturity). Known from Orange and San Diego Counties, and Baja California.	No effect
Branchinecta lynchi	Vernal pool fairy shrimp	FT	–	Vernal pools and similar features in unplowed grassland areas. Pools must contain water for at least 3 weeks to allow for maturation and reproduction. Known from the Central Valley and adjacent foothill areas, the central coast and south coast ranges, from the transverse ranges near Santa Clarita, from the Santa Rosa Plateau, Skunk Hollow, and the Stowe Road vernal pool west of Hemet in Riverside County, and from northwest San Diego County. May also occur in Orange County. Occurs at up to about 2,300 ft in elevation in areas north of Kern County and at up to 5,600 ft in elevation in areas to the south.	No effect
Flowering Plants					
Baccharis vanessae	Encinitas baccharis	FT	SE	In chaparral, generally on sandstone soils in steep, open, rocky areas (north-facing outcrops, cliffs) at 200 to 2,400 ft in elevation. Known only from San Diego County, California.	No effect
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE	SE	Vernal pools and similar mesic habitats in coastal scrub and grassland at 50 to 2,000 ft in elevation. In California, known only from Riverside and San Diego Counties. In Riverside County, this species is known only from the Santa Rosa Plateau. Also occurs in Mexico.	No effect
Navarretia fossalis	Spreading navarretia	FT	-	In vernal pools, playas, shallow freshwater marshes, and similar sites at 50 to 2,700 ft in elevation. In California, known only from Los Angeles, San Luis Obispo, Riverside, and San Diego Counties. Also occurs in Mexico.	No effect
Brodiaea filifolia	Thread-leaved brodiaea	FT	SE	Usually on clay or associated with vernal pools or alkaline flats; occasionally in vernally moist sites in fine soils (clay loam, silt loam, fine sandy loam, loam, loamy fine sand). Typically associated with needlegrass or alkali grassland or vernal pools. Occurs from 80 to 3,700 ft in elevation. Known only from Los Angeles, Orange, Riverside, San Bernardino, San Diego, and San Luis Obispo Counties, California.	No effect

Table 2.15.1 Effect Determination for Federally Listed Species and Critical Habitat

Scientific Name	Common Name	Status		General Habitat Description	Effect Determination
		USFWS	CDFW		
Verbesina dissita	Big-leaved crownbeard	FT	ST	Occurs in southern maritime chaparral (90% of time) and coastal scrub (10% of time) from 135 to 615 ft in elevation along the immediate coast.	No Effect
Allium munzii	Munz's onion	FE	-	Seasonally moist sites on clay soils (generally) or within rocky outcrops (pyroxenite) on rocky-sandy loams (such as Cajalco, Las Posas, and Vallecitos) with clay subsoils, in openings within coastal sage scrub, pinyon juniper woodland, and grassland, at 1,000 to 3,500 ft in elevation. Known only from western Riverside County in the greater Perris Basin (Temescal Canyon-Gavilan Hills/Plateau, Murrieta-Hot Springs areas) and within the Elsinore Peak (Santa Ana Mountains) and Domenigoni Hills regions.	No Effect
Ambrosia pumila	San Diego ambrosia	FE	-	Occurs in open, seasonally wet, generally low areas in floodplains or at edges of vernal pools or playas, usually in sandy loam or on clay (including upland clay slopes), at 70 to 1,600 ft in elevation.	No Effect
Dudleya cymosa ssp. *ovatifolia*	Santa Monica dudleya	FT	-	Perennial herb. Cracks and crevices of rock outcrops and cliff faces (volcanic or sedimentary) in canyons (primarily on north-facing slopes) in chaparral and coastal scrub at 500 to 5,500 ft in elevation. Known only from Los Angeles and Orange Counties, California.	No Effect
Dodecahema leptoceras	Slender-horned spineflower	FE	SE	Occurs in sandy cobbly riverbed alluvium in alluvial fan sage scrub (usually late seral stage), on floodplain terraces and benches that receive infrequent overbank deposits from generally large washes or rivers, where it is most often found in shallow silty depressions dominated by leather spineflower (*Lastarriaea coriacea*) and other native annual species, and is often associated with cryptogamic soil crusts composed of bryophytes, algae and/or lichens. Occurs at 600 to 2,500 ft in elevation.	No Effect
Dudleya stolonifera	Laguna Beach dudleya	FT	ST	Occurs in chaparral, cismontane woodland, coastal scrub, and valley and foothill grasslands, often in thin soil on north-facing sandstone cliffs. From 30 to 780 ft in elevation.	No Effect
Critical Habitat					
Arroyo Toad Critical Habitat		USFWS Designated		May affect, likely to adversely affect	

Source 1: NES (February 2018).
Source 2: USFWS Information Planning and Conservation System (IPaC). 2017.
Source 3: National Oceanic and Atmospheric Administration (NOAA). 2017.

CDFW = California Department of Fish and Wildlife
DPS = Distinct Population Segment
FE = federally endangered
FT = federally threatened
ft = foot/feet
NES=Natural Environment Survey
SE = State endangered
U.S. = United States
USFWS = United States Fish and Wildlife Service

No Build Alternative

The No Build Alternative would not include the operation of any of the proposed project improvements. Existing activities along SR-74 would continue under the No Build Alternative. Therefore, the No Build Alternative would not result in any new permanent impacts to listed special-status plant and animal species.

2.15.4 Avoidance, Minimization, and/or Mitigation Measures

In addition to Measures BIO-1 through BIO-3 provided in Section 2.11, Measure BIO-13 provided in Section 2.14, and Project Features PF-WQ-1 and PF-WQ-2 provided in Section 2.7, the following measures would avoid, minimize, and mitigate impacts to the ARTO and existing downstream breeding or critical habitat:

BIO-18 **Avoidance of Arroyo Toad Breeding Habitat.** No construction work shall occur within San Juan Creek and suitable breeding habitat during the arroyo toad (ARTO) breeding season (generally between March 15 and July 1).

BIO-19 **Arroyo Toad Pre-Construction Surveys.** Pre-construction surveys for ARTO shall be conducted 2 weeks prior to ground-disturbing activities (including placement of heavy equipment) in or near aquatic habitats. The pre-construction surveys will be conducted by a USFWS-approved qualified Biologist (i.e., one with ARTO surveying/handling experience) to determine their presence or absence within the construction footprint. If non-native species are found during the survey effort, they will be removed. The Wildlife Agency approved/ qualified Biologist will walk the impact area to search for any potential breeding areas. To the extent possible, pre-construction surveys will be conducted under weather conditions when ARTO are expected to be active. If construction begins under conditions that would not be conducive to ARTO activity, pre-construction surveys may be conducted more than 2 weeks prior. A report documenting the pre-construction survey results and measures that will be required during construction will be provided to Caltrans and the Wildlife Agencies prior to commencing construction or within 2 weeks of completion of field surveys, whichever is earlier. If ARTO are found within the construction footprint, the occupied habitat and an appropriate buffer (as determined by a qualified Biologist) will be avoided to the maximum extent practicable.

BIO-20 **Arroyo Toad Exclusionary Fencing.** All construction activities shall be limited to the impact boundaries by installing exclusionary fencing (i.e., silt fence or other suitable non-penetrable fencing) along the boundary to prevent construction from encroaching into adjacent areas and to exclude ARTO from the construction site. A USFWS-approved biologist permitted to handle ARTO shall conduct weekly ARTO exclusionary fence inspections to ensure that any breaks in the fencing or erosion control measures are repaired immediately.

BIO-21 **Arroyo Toad Biological Monitor.** A USFWS-approved Biologist permitted to handle ARTO shall monitor all construction activities within and adjacent to occupied ARTO habitat. The ARTO monitoring shall occur weekly if construction activities occur outside the breeding season. If work is required near occupied habitat during the breeding season, then monitoring shall occur daily. If ARTO are found, the qualified Biologist may relocate them out of harm's way to reduce injury or mortality from equipment, foot traffic, or ground disturbance. Field notes and weekly memos will be provided to Caltrans detailing monitoring items and fence conditions.

BIO-22 **Worker Environmental Awareness Program.** Prior to construction, a qualified Biologist shall provide a worker environmental awareness program (WEAP) for listed species that may be affected by the project. The program shall be presented to all personnel working on site during construction.

BIO-23 **Compensatory Mitigation for Suitable Arroyo Toad Habitat.** Caltrans will continue existing eradication efforts within San Juan Creek for an additional 5-year period. Invasive ARTO predators within San Juan Creek and associated habitats will be removed during the 5-year period, beginning no sooner than 2019.

On October 30, 2018, the USFWS issued a Section 7 Consultation letter that concurs that the project is not likely to adversely affect CAGN or LBVI, and that the project is not likely to jeopardize the continued existence of the ARTO and is not likely to result in the destruction or adverse modification of designated ARTO critical habitat. The letter contains the following Conservation Measures, some of which overlap with

commitments made in Measures BIO-1 through BIO-23,[1] that have been incorporated into this environmental document and will be implemented in addition to the measures referenced above to avoid and/or minimize impacts to threatened and endangered species:

BIO-24 **Project Biologist.** A biologist (Project Biologist)[2] approved by the Carlsbad Fish and Wildlife Office (CFWO) will be on site: (a) during all vegetation clearing/grubbing; and (b) weekly during project construction within 500 feet of ARTO habitat to monitor compliance with all conservation measures. Caltrans will submit the biologist's name, contact information, and work schedule on the project to the CFWO at least 15 working days prior to initiating project impacts. The Project Biologist will be provided with a copy of this consultation. The Project Biologist will be available during pre-construction and construction phases to address protection of sensitive biological resources, monitor ongoing work, and maintain communications with construction personnel to facilitate the appropriate and lawful management of issues relating to biological resources. The Project Biologist will report any non-compliance issue to the Resident Engineer and Caltrans Project Biologist such that work can be halted if necessary, and the issue can be discussed with the CFWO to ensure the proper implementation of species and habitat protection measures. The Caltrans Project Biologist will report all non-compliance issues to the CFWO within 1 business day of notification.

BIO-25 **Temporary Impact Restoration Plan.** Caltrans will submit a habitat restoration plan for temporary impact areas to the CFWO for review and approval at least 30 days prior to initiating project impacts. The plan will include the following information and conditions:

a) All habitat restoration/enhancement sites will be prepared for planting in a way that mimics natural habitat to the maximum

---

1 In cases where the language in Measures BIO-1 through BIO-23 conflicts with that presented in Measures BIO-24 through BIO-48, the Biological Opinion measure language (BIO-24 through BIO-48) shall be followed.

2 The Project Biologist will be familiar with the biology and ecology of the ARTO and with the habitats that support this species.

extent practicable. All plantings will be installed in a way that mimics natural plant distribution and not in rows;

b) Planting palettes (plant species, size, and number/acre) and seed mixes (plant species and pounds/acre) will be limited to locally native species (e.g., species found in or near the biological study area for the project). The source location of all plant material and seed will be provided to the CFWO prior to use in restoration activities;

c) Container plant survival will be 80 percent of the initial plantings for the first 5 years. At the first and second anniversary of plant installation, all dead plants will be replaced unless their function has been replaced by plants from seed or natural recruitment;

d) A final implementation schedule will indicate when all impacts, as well as restoration planting and irrigation, will begin and end;

e) The final restoration plan will include 5 years of success criteria for restoration areas including: percent cover, evidence of natural recruitment of multiple species for all habitat types, 0 percent coverage will be maintained for woody California Invasive Plant Council's (Cal-IPC's) "Invasive Plant Inventory" species (e.g., trees and shrubs), and no more than 10 percent coverage for other exotic/weed species;

f) A minimum 5 years of maintenance and monitoring of restoration areas, unless success criteria are met earlier and all artificial water supplies have been off for at least 2 years;

g) A qualitative and quantitative vegetation monitoring plan with a map of proposed sampling locations. Photo points will be used for qualitative monitoring, and stratified-random sampling will be used for all quantitative monitoring;

h) Contingency measures in the event of restoration failure;

i) Annual mitigation maintenance and monitoring reports will be submitted to the CFWO no later than December 1 of each year; and

j) To minimize impacts to ARTO during maintenance of restoration areas, the following measures will be implemented:

i. If restoration maintenance work is necessary within or directly adjacent to suitable ARTO breeding habitat during the active season for ARTO (March 1–August 15) while water is flowing or has ponded in the area, the Project Biologist will monitor potential ARTO breeding habitat to determine whether egg clutches, larvae, or juveniles are present. If eggs, larvae, or juvenile ARTO are found, restoration maintenance work will not occur in the area until signs of breeding are no longer evident.

ii. Restoration maintenance work during rain events will be avoided to the greatest extend feasible as ARTO may become active during rain events and work may result in sedimentation into breeding habitat. To ensure that restoration work is completed in a timely fashion, work may continue during a light or intermittent rain, if the Project Biologist, using his/her best judgment, determines that increased impacts to ARTO are unlikely.

iii. Either ARTO exclusion fencing will be maintained around restoration areas for the duration of restoration maintenance work, or the following measure will be implemented: All earth-disturbing activities conducted for restoration work (e.g., irrigation repairs and replanting) where there is potential for the presence of aestivating ARTO (i.e., sandy, friable soils) will be monitored by the Project Biologist who will ensure that impacts to ARTO are avoided to the greatest extent feasible by either: (1) overseeing earth-disturbing activities (e.g., excavation of planting basins and irrigation repairs) in potential aestivation areas and ensuring that hand tools are used to a depth of 1 foot such that ARTO are detected and salvaged if present; or (2) conducting pre-construction translocation surveys and directing work away from observed ARTO, or relocating ARTO to suitable habitat away from the immediate work area.

iv. If ARTO exclusion fencing is removed, transportation of materials for restoration maintenance work within suitable habitat will be conducted on foot, or with lightweight all-terrain vehicles and/or small gators with trailers. If possible, equipment used will have soft tires with minimal tread and a wide wheel base to better distribute weight and reduce soil disturbance. Vehicle speed will not exceed 15 miles per hour.

BIO-26 **Native Landscaping**. Cut-and-fill slopes within the permanent impact area will be revegetated with native vegetation with similar composition to adjacent habitats. Landscaping for the project will be limited to locally native species. Duff and rare plants may be salvaged from the project impact footprint to aid in revegetating slopes with native habitats. The revegetated areas will have temporary irrigation and will be planted with native container plants and seeds. At least 3 years of plant establishment/maintenance on these slopes will be conducted to control invasive weeds. These areas will be planted as soon as possible following grading to prevent encroachment by weeds.

BIO-27 **Arroyo Toad Compensatory Mitigation.** To offset the impacts of the project on ARTO and its habitat, including permanent impacts to 1.23 acres of suitable habitat for the ARTO out of critical habitat and 2.47 acres of designated ARTO critical habitat with physical and biological features, Caltrans will either: (a) establish a non-wasting endowment to which this project would contribute $250,000 to fund long-term management actions for ARTO in San Juan Creek, including predator control (the endowment will be available for use no later than March of 2020[1]); or (b) allocate $250,000 to fund at least 5 years of ARTO surveys and invasive species (American bullfrog [*Lithobates catesbeiana*], red swamp crayfish [*Procambarus clarkii*], and African clawed frog [*Xenopus laevis*]) removal within San Juan Creek within

[1] The 2017 SR-74 Emergency Culvert Replacement Project would also contribute $100,000 in funding toward the endowment for a total of $350,000 (with a 5 percent return, this is anticipated to provide 17,500 per year in perpetuity).

Cleveland National Forest and Ronald W. Caspers Wilderness Park.[1] Caltrans will submit qualifications and contact information for the individual(s) that will implement the predator control program and work plan to the CFWO for review and approval at least 15 working days prior to initiating project impacts. The plan will include a map of the location where predator control and survey efforts will occur and an implementation schedule that indicates when predator control efforts and surveys will occur. The schedule will document that predator control work will commence prior to or concurrent with project impacts. Annual reports will be provided to the CFWO by March 1 summarizing predator control and survey efforts. This is a continuation of efforts associated with the following Biological Opinions: FWS-OR-1688.6, FWS-OR-10B0217-10FE0452, FWS-OR-11B0223-11FE0362, and FWS-OR-12B0136-13F0306.

BIO-28 **Arroyo Toad Translocation Monitoring Program.** An ARTO translocation monitoring program will be developed and implemented. The program will be provided to the CFWO for review and approval. The program will include the following requirements:

a) Prior to clearing, grubbing, and construction activities, the Project Biologist will monitor ARTO breeding activity in those project areas containing or adjacent to breeding habitat. The biologist will determine when egg clutches or larvae are no longer present in the waterway. When signs of breeding are no longer evident, an exclusionary fence will be installed and clearance surveys initiated.

b) Prior to clearing, grubbing, and construction activities, ARTO exclusionary fencing will be installed around the perimeter of all work areas within potential ARTO habitat with the exception of areas where topography is such that the Project Biologist, using his or her best judgment, believes that occupancy by ARTO is unlikely, and installation of ARTO fencing is not practical. In areas without water flows, the ARTO exclusion fence will consist of

[1] The 2017 SR-74 Emergency Culvert Replacement Project would also contribute $100,000 in funding for two additional years of ARTO surveys and predator control work (a total of $350,000 for 7 years of work).

woven nylon fabric or similar material at least 2 feet high, staked firmly to the ground. In areas where soils are suitable for aestivation, the lower 1 foot of material will stretch outward along the ground and be secured with a continuous line of sandbags to prevent burrowing beneath the fence. Doubling this line (i.e., stacking sand or gravel bags two-deep) may reduce maintenance and should be considered in order to improve the integrity of the fencing. In areas where soils are not suitable for aestivation, (i.e., hardpack soils), fencing may be buried to reduce maintenance concerns and improve the integrity of the fencing over time. Mechanized installation of buried portions of the fencing may be considered as it may reduce foot-traffic and disturbance of adjacent habitat. In areas where there is existing or potential inundation, wire mesh held in place with t-posts and secured with sand or gravel bags should be utilized to allow for the passage of water flows without compromising the integrity of the fencing. A small amount of vegetation may be removed to facilitate installation of the fencing, so long as it is conducted without disturbing the soil in areas where soils are suitable for aestivation, and does not impact habitats to be avoided. In areas with challenging topography where ARTO occupancy is deemed unlikely by the Project Biologist, the limits of work will be clearly delineated using other means (e.g., stakes with bright orange flagging). Fence ends will tie into areas with challenging topography in a manner designed to keep toads out of the project footprint. Decisions on the appropriate fencing installation method for a given reach will be made by the Project Biologist. Fencing will be clearly visible to personnel on foot and operating heavy equipment. Caltrans will submit to the CFWO for approval, at least 5 days prior to initiating project impacts (except for impacts resulting from clearing to install ARTO exclusion fencing), the final plans for initial clearing and grubbing of habitat and project construction. These final plans will include photographs that show the fenced limits of impact, the flagged project limits in areas with challenging topography where occupancy was deemed unlikely, and all areas to be impacted or avoided. ARTO exclusionary fencing will be maintained in good

repair until the completion of project construction and removed upon project completion.

c) Prior to the initiation of construction activities, but after exclusionary fencing has been installed, a minimum of six consecutive night surveys for ARTO will be conducted within the fenced project area by the Project Biologist. Surveys will continue until there have been two consecutive nights without ARTO inside the fence. ARTO will be excluded from the fenced project footprint before large-scale vegetation removal efforts commence; however, some vegetation removal may occur to improve visibility for salvage of ARTO, as long as it is conducted without disturbing the soil and within the fenced project footprint. Surveys will be conducted during the appropriate climatic conditions and during the appropriate time of night to maximize the likelihood of encountering ARTO. If climatic conditions are not appropriate for ARTO movement during the surveys, the biologist may attempt to illicit a response from the ARTO, during nights (i.e., at least 1 hour after sunset) with temperatures above 10 degrees Celsius (50 degrees Fahrenheit), by spraying the project area with water to simulate a rain event. If it is not feasible to spray the entire project area with water, then spraying would occur in the areas of greatest concern under the direction of the Project Biologist.

d) Capture methods will follow commonly accepted techniques for amphibian field sampling, including capture by hand and pitfall trapping. All pitfall traps will be covered or removed when clearance surveys are not occurring. ARTO will be handled in an expedient manner with minimal harm. Captured ARTO will not be handled for more than 15 minutes. Any ARTO exhibiting signs of physiological distress will be immediately released in the most proximal and safe suitable habitat. Any ARTO captured will be checked for a Passive Integrated Transponder (PIT) tag with a PIT-tag reader by the Project Biologist.

e) If the exclusion fencing is found damaged during weekly monitoring conducted by the Project Biologist during the active season for ARTO (March 1–August 15), thereby allowing ARTO

access to the impact area, ARTO exclusion surveys will be repeated by the Project Biologist for a minimum of three consecutive nights prior to any additional construction activities occurring in the area.

f) The approved Project Biologist will monitor all groundbreaking activities that occur within areas demarcated with ARTO exclusion fencing to salvage and relocate ARTO and to quantify take of ARTO.

g) If construction will occur in ARTO breeding habitat during the active season for ARTO (March 1–August 15) while water is flowing in the creek or has ponded within the action area, the Project Biologist will monitor potential ARTO breeding habitat to determine whether egg clutches, larvae, or juveniles are present in the waterway. If eggs, larvae, or juvenile ARTO are found, the Project Biologist will request that the Resident Engineer halt work in the area until signs of breeding are no longer evident.

h) To avoid transferring disease or pathogens between aquatic habitats during surveys and handling of ARTO, the Project Biologist will follow the *Declining Amphibian Population Task Force's Fieldwork Code of Practice* (DAPTF 1998), or newer version when available.

i) American bullfrogs (*Lithobates catesbeiana*) and other exotic animal species that prey upon or compete with ARTO for resources will be excluded, destroyed, or otherwise permanently removed from the habitat by the Project Biologist if encountered.

j) The Project Biologist will maintain a complete record of all ARTO encountered and relocated in association with the project. The date and time of observation, sex, physical dimensions, PIT-tag code, coordinates/specific location of capture and release, and photographs (when possible) will be recorded and provided to the CFWO, within 30 days of the completion of translocation.

BIO-29 **Biological Resources Education Program.** An employee education program will be developed and implemented by the Project Biologist.

Each employee (including temporary, contractors, and subcontractors) will receive a training/awareness program prior to working on the proposed project. They will be advised of the potential impact to the listed species and the potential penalties for taking such species. At a minimum, the program will include the following topics: occurrence of the listed and sensitive species in the area (including photographs), their general ecology, sensitivity of the species to human activities, legal protection afforded these species, penalties for violations of federal and State laws, reporting requirements, and project features designed to reduce the impacts to these species and promote continued successful occupation of the project area.

BIO-30 **Invasive Species Removal.** During project construction (excluding the plant establishment period, which will be addressed in the restoration plan) all invasive species included on the National Invasive Species Management Plan, the State of California Noxious Weed List, and the California Invasive Plant Council's Invasive Plant Inventory list (Cal-IPC 2006) found growing within the project impact area will be identified and removed at least once per month. Special care will be taken during the transport, use, and disposal of soils containing invasive weed seeds, and all weedy vegetation removed during construction will be properly disposed of to prevent spread into areas outside of the construction area. All heavy equipment will be washed and cleaned of debris prior to entering a new area to minimize the spread of invasive weeds.

BIO-31 **Nighttime Construciton Lighting.** If nighttime construction is necessary, all project lighting (e.g., staging areas, equipment storage sites, and/or roadway) will be selectively placed and directed onto the roadway or construction site and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats. No nighttime construction or lighting will occur in ARTO breeding habitat during the active season (March 1–August 15).

BIO-32 **Project Lighting.** Permanent project lighting will be of the lowest illumination necessary for safety and will be directed toward the roadway and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats.

Caltrans will review the permanent lighting plans and then submit them to the CFWO for review and approval.

BIO-33 **Water Quality Best Management Practices.** A construction Storm Water Pollution Prevention Plan (SWPPP) and soil erosion and sedimentation plan will be developed to identify best management practices that will be implemented during construction to minimize erosion, prevent sediment and debris from entering drainages, and maintain water quality. Sediment will not be stockpiled in areas where ARTO might burrow into the loose material, or where material could be washed into drainages by rainfall. Erosion and sediment control devices used for the proposed project, including fiber rolls and bonded fiber matrix, will be made from biodegradable materials such as jute, with no plastic mesh, to avoid creating a wildlife entanglement hazard.

BIO-34 **Designated Maintenance, Staging, and Fueling Areas.** All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will be restricted to designated areas located within previously disturbed upland. They will be located such that runoff from the designated areas will not enter ARTO breeding habitat.

BIO-35 **Fugitive Dust Control.** Impacts from fugitive dust will be minimized through watering and other appropriate measures.

BIO-36 **Construction Site Housekeeping.** The project site will be kept as clear of debris as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site.

BIO-37 **Borrow and Disposal Sites.** If fill must be borrowed from, or disposed of off site, the construction contractor will identify any necessary borrow and disposal sites and provide this information to Caltrans for review. Caltrans will review borrow and disposal site information and submit the information to the CFWO. If borrow or disposal activities may affect a listed species or critical habitat, Caltrans will re-initiate Section 7 consultation.

BIO-38 **Domestic Pets.** Project personnel will be prohibited from bringing domestic pets to construction sites to ensure that domestic pets do not disturb or depredate wildlife in adjacent native habitats.

BIO-39 **Monthly Compliance Reports.** The Project Biologist will submit monthly email reports (including photographs of impact areas) to the Caltrans Project Biologist during clearing of, and construction within, 500 feet of ARTO habitat. The monthly reports will document that authorized impacts were not exceeded and in general compliance with all conditions. The reports will also outline the location of construction activities, the type of construction that occurred, and equipment used. These reports will specify numbers and locations, and sex of listed species (if observed), their observed behavior (especially in relation to construction activities), and remedial measures employed to avoid and minimize impacts to these species. Raw field notes should be available upon request by the CFWO. The Caltrans Project Biologist will review reports and forward them to the CFWO.

BIO-40 **Project Completion Compliance Report.** The Project Biologist will submit a final report to the Caltrans Project Biologist within 120 days of project completion including photographs of impact areas and adjacent habitat, documentation that authorized impacts were not exceeded, and documentation that general compliance with all conservation measures was achieved. The report will specify numbers and locations of listed species (if observed); observed listed species behavior (especially in relation to project activities); and remedial measures employed to avoid and minimize impacts to listed species and critical habitat. Raw field notes should be available upon request by the CFWO. The Caltrans Project Biologist will review the report and forward it to the CFWO within 15 days of receipt.

BIO-41 **Wildlife Crossings.** Wildlife connectivity will be addressed consistent with the recommendations in the *Wildlife Crossings Guidance Manual* (Caltrans 2007) to minimize fragmentation and ensure that ecosystem processes are maintained for the benefit of listed species. Caltrans will coordinate with the CFWO during project design and construction to ensure that the following wildlife connectivity measures are implemented by the project:

a) Culverts will be designed, constructed, and maintained with a minimum of 6 inches of natural substrate in the bottom.

b) Culvert openings will be designed such that wildlife following drainages or the base of slope can find and access openings to move under the road. They will be flush with the road slope and ground, and will not be perched or extend out into the habitat.

c) If rock slope protection is required at culvert openings, it will be filled and maintained with natural substrate.

d) Culverts will be straight with no vertical or horizontal bends to allow for line of sight through the culvert and a level surface for movement of wildlife.

e) Restoration of temporary impact areas will be designed such that vegetation does not obscure undercrossings (e.g., bridges and/or culverts). Vegetation may be used to funnel wildlife toward undercrossings.

f) Culverts will be constructed of concrete and not galvanized steel to avoid amphibian mortality from the absorption of zinc in the galvanized coating.

g) If feasible, oversized culverts will be used that will not only accommodate the movement of water, but will also improve wildlife connectivity in the project area.

BIO-42 **Protocol Surveys for Coastal California Gnatcatcher and Least Bell's Vireo.** Protocol surveys will be conducted for coastal California gnatcatcher (CAGN) and least Bell's vireo (LBVI) within 1 year prior to the commencement of vegetation clearing and construction activities for the project.

BIO-43 **Re-Initiate Section 7 Consultation.** If CAGN and/or LBVI are observed in the project impact footprint, Caltrans will re-initiate consultation with the CFWO to address unanticipated impacts to these species.

BIO-44 **Coastal California Gnatcatcher and Least Bell's Vireo Impact Minimization Measures.** If CAGN and/or LBVI are observed within 500 feet of the project impact footprint, the following measure will be implemented to avoid and minimize impacts to these species:

a) Construction within 500 feet of habitat occupied by CAGN and/or LBVI will occur between September 16 and February 14 to avoid these species' breeding seasons. If project construction is necessary during these species' breeding seasons within 500 feet of habitat occupied by CAGN and/or LBVI, nesting surveys will be conducted to determine and document the presence/ absence of breeding CAGN and/or LBVI. If active nests are identified within 500 feet of the noise-generating construction activities and noise is in excess of 60 A-weighted decibels measured in the equivalent continuous sound level per hour (dBA $L_{eq}(h)$) or ambient noise levels (whichever is higher), noise attenuation measures will be implemented to reduce noise levels to 60 dBA $L_{eq}(h)$ or ambient noise levels at the nest location. Noise monitoring will occur during the breeding season and be reported daily to the CFWO. A CFWO-approved Project Biologist[1] will ensure that avoidance and minimization measures are implemented such that adverse effects to CAGN and/or LBVI do not occur as a result of the adjacent construction activities (e.g., noise and lighting). If the Project Biologist suspects that avoidance and minimization measure are ineffective, and project activities may be adversely affecting these bird species, culpable activities will be suspended within 500 feet of active nesting territories until nesting activity is completed and fledglings are no longer in the area or until effective avoidance and minimization measures can be identified, implemented, and

[1] The Project Biologist for this measure will be a trained ornithologist with at least 40 hours in the field observing LBVI and CAGN and documented experience locating and monitoring LBVI and CAGN nests. In order to receive CFWO approval, the biologist's qualifications, contact information, and work schedule on the project must be submitted to the CFWO at least five working days prior to initiating project impacts.

demonstrated to be effective. If measures cannot be identified, implemented and demonstrated to be effective to avoid adverse effects to CAGN and/or LBVI, then project construction will stop until consultation has been completed with the CFWO to address unanticipated impacts to these species.

BIO-45 **Vegetation Clearing Restrictions.** All vegetation clearing for the project will occur between September 16 and February 14 to avoid the CAGN and LBVI breeding seasons. Clearing may commence earlier in the fall if the Project Biologist demonstrates to the satisfaction of the CFWO that all breeding is complete.

BIO-46 **Coastal Sage Scrub Restoration Maintenance.** If maintenance of a coastal sage scrub restoration area is necessary between February 15 and August 31, a biologist with knowledge of the biology and ecology of CAGN and approved by the CFWO will survey for CAGN within the restoration area, and access paths to it, and other areas susceptible to disturbances by site maintenance. Surveys will consist of three visits separated by 2 weeks, starting March 1 of each maintenance/ monitoring year. Work will be allowed to continue on the site during the survey period. However, if CAGN are found during any of the visits, Caltrans will notify and coordinate with the CFWO to identify measures to avoid and/or minimize effects to CAGN (e.g., nests and an appropriate buffer will be flagged by the biologist and avoided by the maintenance work).

BIO-47 **Riparian Restoration Maintenance.** If maintenance of a riparian restoration area potentially occupied by LBVI is necessary between March 15 and August 31, a qualified biologist will survey for LBVI within the restoration area, and access paths to it, and other areas susceptible to disturbances by restoration site maintenance. Surveys will consist of three visits separated by 2 weeks starting April 10 of each maintenance/monitoring year. Restoration work will be allowed to continue on the site during the survey period. However, if LBVI are found during any of the visits, the Caltrans Project Biologist will notify and coordinate with the CFWO to identify measures to avoid and/or minimize effects to the LBVI (e.g., nests and an appropriate

buffer will be flagged by the biologist and avoided by the maintenance work).

BIO-48 **Other Protective Measures.** Measures included in the Biological Opinion to avoid and minimize project impacts to ARTO (e.g., monitoring, restoration of temporary impact areas, temporary construction fencing, employee education, invasive species, lighting, best management practices, dust, material disposal, and wildlife connectivity) will also avoid and minimize project impacts to CAGN and LBVI.

This page intentionally left blank